Table S1. ClustalW multiple sequence alignment for parent CBH II enzyme catalytic domains. Blocks 2, 4, 6 and 8 are denoted by boxes and grey shading. Blocks 1, 3, 5 and 7 are not shaded.

```
H.inso          GNPFEGVQLWANNYYRSEVHTLAIPQITDPALRAAASAVAEVPSFQWLDRNVTVDTLLVQ 60
C.ther          GNPFSGVQLWANTYYSSEVHTLAIPSLS-PELAAKAAKVAEVPSFQWLDRNVTVDTLFSG 59
H.jeco          GNPFVGVTPWANAYYASEVSSLAIPSLT-GAMATAAAAVAKVPSFMWLDT-LDKTPLMEQ 58
                **** **  *** ** *** :****.::   : : *: **:**** ***  :   .*:

H.inso          TLSEIREANQAGANPQYAAQIVVYDLPDRDCAAAASNGEWAIANNGVNNYKAYINRIREI 120
C.ther          TLAEIRAANQRGANPPYAGIFVVYDLPDRDCAAAASNGEWSIANNGANNYKRYIDRIREL 119
H.jeco          TLADIRTANKNGGN--YAGQFVVYDLPDRDCAALASNGEYSIADGGVAKYKNYIDTIRQI 116
                **::** **: *.*  **. :************ *****::**:.*. :** **: **::

H.inso          LISFSDVRTILVIEPDSLANMVTNMNVPKCSGAASTYRELTIYALKQLDLPHVAMYMDAG 180
C.ther          LIQYSDIRTILVIEPDSLANMVTNMNVQKCSNAASTYKELTVYALKQLNLPHVAMYMDAG 179
H.jeco          VVEYSDIRTLLVIEPDSLANLVTNLGTPKCANAQSAYLECINYAVTQLNLPNVAMYLDAG 176
                ::.:**:**:**********:***:.. **:.* *:* *   **:.**:**:****:***

H.inso          HAGWLGWPANIQPAAELFAKIYEDAGKPRAVRGLATNVANYNAWSVSSPPPYTSPNPNYD 240
C.ther          HAGWLGWPANIQPAAELFAQIYRDAGRPAAVRGLATNVANYNAWSIASPPSYTSPNPNYD 239
H.jeco          HAGWLGWPANQDPAAQLFANVYKNASSPRALRGLATNVANYNGWNITSPPSYTQGNAVYN 236
                ********** :***:***::*.:*. * *:**********.*.::***.**. *. *:

H.inso          EKHYIEAFRPLLEARGFP-AQFIVDQGRSGKQPTGQKEWGHWCNAIGTGFGMRPTANTGH 299
C.ther          EKHYIEAFAPLLRNQGFD-AKFIVDTGRNGKQPTGQLEWGHWCNVKGTGFGVRPTANTGH 298
H.jeco          EKLYIHAIGPLLANHGWSNAFFITDQGRSGKQPTGQQQWGDWCNVIGTGFGIRPSANTGD 296
                ** **.*: ***  :*:  * **.* **.******* :**.***. *****:**:****.

H.inso          QYVDAFVWVKPGGECDGTSDTTAARYDYHCGLEDALKPAPEAGQWFNEYFIQLLRNANPP 359
C.ther          ELVDAFVWVKPGGESDGTSDTSAARYDYHCGLSDALTPAPEAGQWFQAYFEQLLINANPP 358
H.jeco          SLLDSFVWVKPGGECDGTSDSSAPRFDSHCALPDALQPAPQAGAWFQAYFVQLLTNANPS 356
                . :*:*********.*****::*.*:* **.* *** ***:** **: ** *** ****.

H.inso          F- 360
C.ther          F- 359
H.jeco          FL 358
                *
```